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343. (*Selected*) by Prof. H. T. Eddy.—If E^2 be the sum of the squares of the edges of a tetrahedron, F^2 the sum of the squares of the areas of the faces and V the volume, show that the principal semi axes of the ellipsoid inscribed in the tetrahedron, touching each face in the center of gravity and having its center at the center of gravity of the tetrahedron, are the roots of

$$k^6 - \frac{E^2}{2^4 \cdot 3} k^4 + \frac{F^2}{2^4 \cdot 3^3} k^2 - \frac{V^2}{2^6 \cdot 3} = 0.$$

344. By Prof. E. B. Seitz.—Through each of two points, taken at random within a circle, a random chord is drawn; find (1) the prob'y that the chords will intersect; and (2) if a third random chord be drawn thro' a 3d random p't, find the prob's that the 3 chords will intersect in 0, 1, 2, 3 p'ts.

345. By Prof. W. W. Johnson.—The great circle from A (φ_1, λ_1) to B (φ_2, λ_2) passes north of the parallel of latitude φ_0 ; what is the longitude, λ_0 of the point P on this parallel so that the course APB shall be the shortest course from A to B which does not pass north of this parallel?

QUERY BY H. HEATON.—Is there any known general method of elimination when we have two or more equations containing two or more unk'n quantities, the equations being of the third degree or higher?

DETERMINATION OF A MERIDIAN.

BY W. L. MARCY, U. S. DEP. MIN'L SURVEYOR, LEADVILLE, COL.

THE simplicity of any independent calculation for the azimuth of Polaris, involving nothing but a few tables of an Ephemeris or Almanac and a common case in Spherical trigonometry, should not certainly have made the operation a forbidden field to the average surveyor. It is not so from want of ability. By practice he retains his knowledge of plane trigonometry, forgetting his spherical trigonometry for the want of its application.

A surveyor of more than ordinary accuracy and skill, sent from the far East to do some special work for a mining company, surprised me by expressing the opinion that the elongation of Polaris was equal to the complement of its declination in all latitudes. Another surveyor sits up all night to watch the star to its maximam elongation—a very accurate method when the latitude is closely known, but at so inconvenient a season that few really make the trial.

The observation of the star should not take over 5 to 15 minutes, and it can be made so early in the evening or late in the morning as to dispense